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by

Jessica Hipnar

A thesis submitted in partial fulfillment of the requirements
for graduation with Honors in the Education

Neal, Ted
Thesis Mentor

Spring 2019

All requirements for graduation with Honors in the
Education have been completed.

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Education Honors Advisor

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ABSTRACT

This study examines the change in child anxiety and fear towards dentistry when an intervention in the elementary classroom setting was put in place. My literature review exhibits a lack of information pertaining to attempting to change the views of children in relation to dentistry. There is strong evidence of the reasoning for child dental fear and anxiety, but no information showing the effects of an intervention. This study revealed that an increase in information about dentistry was correlated to an increase in positive feelings towards dentistry. The most statistical piece of data was an increase in student responses to how they feel at the dentist, trending positively. The findings conclude that students' feelings towards dentistry are more positive after an educational presentation about dentistry.

Key Words: anxiety, children, dental, fear

INTRODUCTION

In the dental field, fear from patients is faced by dentists each day. Dental fear encompasses the physical and emotional scare of dental work, as well as the anxieties that accompany it. It has been estimated that nearly 75% of adults in the United States experience some amount of fear in regards to visiting a dentist, which is recommended twice a year (2019). With such a high percentage of adults fearing the dentist, it is likely that there is a similar fear in many children. Dentistry is an important aspect of one's health and avoidance of oral care can have many adverse effects. In an Indian study, it was identified that dental fear in pediatric patients is a source of significant health problems. The same study found that approximately

42% of children have dental fear (Kakkar, Thakkar, Shukla, 2016). There are many factors that play a role in the fear children may have, but can this fear be decreased?

LITERATURE REVIEW

As stated by Chapman and Kirby-Turner (1999), “It is important to acknowledge that fear is a normal phenomenon when any of us are exposed to threat.” What exactly is that threat we are facing at the dentist? Dentistry is invasive and intruding- from x-rays to drilling, personal space is nonexistent as your dentist’s hands are in your entire mouth. This intrusion can easily be seen as intimidating or threatening to children, and patients of all ages, as fear is considered an essential and inevitable emotion. Aside from a lack of personal space, the patient is put in a physical position where they are often unaware of what is going on or being done to them. Fear of the unknown is greater than fear of the known (Gentle Dental, 2019). All of this can be terrifying, especially for a child, and a ‘fight or flight’ response may kick in.

“Several factors contribute to a child's fear of his or her pediatric dentist, especially parents. A Mom's or Dad's dental fear plays a huge role in their child's fear of the dentist since parents naturally transfer their fears of the world onto their young” (Eddis, 2013). Family members are one of the biggest influencers on children as they are role models for them and often the people they are around the most. If a parent exhibits fear or dislike towards going to the dentist or having dental work done, it is likely the child will also exhibit those fears even if they have never experienced it themselves. Instead of painful or invasive procedures, it might be a child’s subjective perception of a dental visit that is decisive in the acquisition of dental fear (Berge, Veerkamp & Hoogstraten, 2002).

According to Eddis (2013), “It has been estimated that 9% to 15% of Americans avoid seeing the dentist because of anxiety and fear. That's about 30 million to 40 million people. In a survey by the British Dental Health Foundation, 36% of those who didn't see a dentist regularly said that fear was the main reason.” While fear is typically derived from pain or the unknown, most dental procedures aren't actually painful. It's clear that the threat of the unknown or previous experience and influence from others can change one's mindset before even going to the dentist.

While children don't often have the choice of avoiding seeing a dentist, many adults choose to avoid going and that is likely to have an affect on their children. Humans are programmed to be fearful of new situations as it is a protective tool. Dr. Vargas, the owner of a pediatric dental office in Iowa, stated that “Very young patients who have never been exposed to the dental environment are fearful but not because it is the dentist, they would be fearful of most any new situation.” In a position where they are unsure of what is being done to them, it makes sense that any child would have some level of fear. It's also been found that children who had better dental health and paid fewer dental visits are more anxious (Murray, Liddell & Donohue, 1989). This is consistent with the idea that children who are less exposed to dentistry are more anxious or fearful.

In conclusion, research into child dental fear and anxiety has identified various explanations and factors. There is strong evidence and data showing that dental fears and anxieties are prevalent among children, especially those who are less exposed. There is still, however, the need to study whether said fear can be proactively decreased. This study aims to address this issue.

METHODOLOGY

As a pre-dental student with a Bachelor's degree in Elementary Education, pediatric dentistry is the perfect melting pot that combines my passions and areas of interest. Of these interests, is one day being able to open and run a pediatric dental office. In order to do so, I have thought about the ways in which I can one day make my practice a place of welcome and excitement for children as the dentist wasn't my favorite place to go when I was growing up. Going to the dentist often comes with fear, anxiety, and the scary unknown for our youth. In order to one day open up a practice, I would need to figure out how to address these challenges and learn where they stem from.

In considering how child dental anxiety and fear is affected and whether or not it can be decreased, I implemented an intervention in the academic setting while taking direct data from the students before and after in the form of a survey. This intervention consisted of bringing a pediatric specialist into the classroom setting to inform the students about dental care and what happens at a dental visit. This presentation was strictly informative and explained to the children the role that a dentist has and what they are doing.

Alongside the intervention, I contacted Dr. Kaaren Vargas, owner of a pediatric dental office in the midwest. I interviewed Vargas, asking her a variety of questions regarding child dental fear, listed in Appendix I. I also received a parent guidelines sheet from Dr. Vargas that is given to all of her patients' guardians (Appendix H). This sheet has friendly dental terminology that families are asked to use with their children in replace of other common terms used in dentistry. Dr. Vargas and her staff use this terminology when working with patients. For example, instead of saying a needle or shot, families are asked to say "sleepy juice." As stated in

Appendix H, their intention is “not to fool the child, it is to create an experience that is positive.”

They are aware that children may have predisposed dental fear or anxiety before coming in so by using terminology off this sheet they are able to help ease those fears and make the entire dental experience more positive. One fun way that Dr. Vargas has found to make her practice an enjoyable place for her patients is by bringing her three dogs with her to work each day.

According to Vargas, her three dogs are the highlight for most children, with prizes being second.

Survey

I surveyed a 1st grade classroom in an urban elementary school in the midwest before assisting in performing the intervention. The school has approximately 500 students, comprised of around 50% caucasian, 35% African American, and 5% Asian. The student population has approximately 40% low socioeconomic status and 20% English language learners. Each student present was given a survey, displayed below in Appendix A, that was colorful and used an emoji scale on three of the six questions. The scale consisted of 5 emojis, ranging from sad to happy in feeling. I chose to use emojis rather than a number scale due to the age of the students I was surveying as pictures were easier for them to understand. The first question on the survey asked whether or not the students had been to the dentist. The following three questions are regarding their feelings towards the dentist, and the last two questions ask about what they like most and least. Students were asked to not put their names or any form of identification on the surveys. Some students did end up putting their names on them, but this was ignored when recording the results as each survey was anonymous. I did not know the age, name, or gender of these students. The only piece of information I had was that they were first-graders in the same classroom.

After the intervention, I gave the same group of students the exact same survey as before. My goal was to see if the overall attitude towards the dentist changed with the place of the intervention. The post-survey was given to the students two days after the presentation was delivered. Students were given a few minutes to fill it out and the classroom teacher read through each question aloud. The students were asked to answer the questions however they wanted, whether that be pictures or words.

Recording Results

In order to assess the results of my surveys, I created data charts to express the values I received (Appendix B-G). Each question from the survey corresponds to its own chart, displaying both the pre-survey and post-survey results together. Questions five and six on the survey (Appendix F & G) were free-response style, asking students to provide their answer in the space given, either in words or pictures. For these questions, responses were grouped into categories for the purpose of making data charts. For example, students who responded with a toy or sticker being what they like the most about the dentist were grouped under the prize category.

Intervention

An intervention took place two months after the initial survey. Cathy Skotowski, Clinical Associate Professor in the Department of Pediatric Dentistry at The University of Iowa College of Dentistry, led an informative presentation that lasted twenty-five minutes. This presentation covered the basics of dental hygiene and focused on who a dentist is and what their job entails

while seeing patients. This presentation was created by Skotowski and already presented to many classrooms before as it is used with third-year dental students in their pediatric rotation for a project where they go out into the schools to educate students. I assisted her by holding up props and puppets throughout.

During the presentation, Skotowski went into detail with showing how to properly brush one's teeth, the amount of toothpaste that should be applied, and some basic procedures that are done at the dentist such as filling a cavity. She also displayed different kinds of foods to the students and asked them to say which ones would be good for your teeth and which ones would be bad, such as soda. Skotowski dressed up as a dentist and explained why they wear certain things, like a mask and gloves. The students were shown different tools that dentists use and what each tool does. A friendly cartoon video was also shown at the end of the demonstration supplementing the information that had previously been presented.

The students reacted positively to the presentation as it was very engaging and response-oriented. The children were given many opportunities to answer questions and share experiences that kept their attention throughout. Their favorite part of the presentation appeared to be when Skotowski brought out an oversized toothbrush to demonstrate how to brush the teeth on the puppet. While previously interviewing Dr. Vargas, a pediatric dental office owner, she stated that "As they get older, we have many tools to ease fears: Tell show do, modeling, ask-tell-ask." Skotowski did just this during the presentation, with modeling and asking questions. She modeled how to properly brush your teeth and involved students with this process. The students reacted positively to the physical aspect of the presentation as they were

curious to visually see what was going on. Overall, the students were engaged and attentive throughout the educational presentation.

RESULTS

Pre-Survey Results

Using the questionnaire I created as displayed in Appendix A, 21 first grade students were surveyed. Out of those 21 students, 20 had been to the dentist before, 1 had not (appendix B). When given the option of whether they like going to the dentist or not, 71% of the students answered yes (Appendix C). This number was much higher than I was expecting based on my literature review, however, this research was just taken from one classroom.

The third and fourth questions on the survey were regarding how the students feel at the dentist and on their way to the dentist (Appendix D and E). I was once again surprised by the results as students responded to both questions quite positively. The third question asked students how they feel at the dentist and 57% of the students responded with the two highest emojis, on a scale of 5 emojis, corresponding to a positive or happy feeling. The results were similar in the fourth question as 62% of the students responded with the two highest emojis when asked how they feel when in their car on the way to the dentist (Appendix D).

The last two questions on the survey were free response style questions where the students were prompted to write in their own answers (Appendix F and G). These questions were aimed to see what students like the most about the dentist as well as the least. It was clear in Appendix F that the students' favorite part about the dentist was a prize, with a majority response of 52%. Receiving a toothbrush was tied for second with the cleaning, with 14% of the responses

for each. Children often receive a prize or toothbrush after a visit to the dentist and getting to take something home with them is clearly the most liked part of the experience. Oppositely, the students' least favorite part of the dentist was fluoride, with the cleaning and pain coming in a close second and third, 33%, 24%, and 19% respectively (Appendix G).

Post-Survey Results

For my post-survey, I again used the questionnaire I created as displayed in Appendix A, surveying the same 21 first grade students. Out of those 21 students, 20 said they had been to the dentist before, 1 had not (Appendix B). This is consistent with my pre-survey results, which helps make my data more consistent as the results would have been potentially skewed if the students had not answered that first question the same. When given the option of whether they like going to the dentist or not, 81% of the students answered yes (Appendix C). This number differs from my pre-survey with an increase of 10%.

The next two questions on the survey both had a positive increase from the pre-survey. For both questions, 76% of the responses were the top two positive emojis as shown in appendix D and E. This is a 19% and 14% increase for the third and fourth questions, respectively. That exhibits a change in feeling regarding dentistry for 4 students out of the 21. When examining the last two questions on the survey, questions five and six (Appendix F and G), a prize remains the students' favorite part of the dentist, with a slight increase from the pre-survey. For the last question, pain and the cleaning were the most defined categories with 24% of responses for each. This is a change from the pre-survey as fluoride was the highest category, however, it is absent in the post-survey.

DISCUSSION

Many states require students to have a dental screening before enrolling in school, with Iowa being one of those states. This would make it assumable that all students in an elementary school have been to a dentist before and had at least one dental experience. “All children newly enrolling in an Iowa elementary or high school are required to have a dental screening. This requirement was passed by the 2007 legislature and became effective July 1, 2008” (2019). This is interesting as one of the students in the class responded both times that they had not previously been to the dentist. Considering they are a student in an Iowa school, it is questionable as to how they have not been to a dentist before. Possible reasonings are that the student doesn’t remember ever going or they could have transferred from a different state. A dental screening is only required for students enrolling in elementary school and it doesn’t specify how the rules would change if transferring takes place.

In examining the results, there was a 10% increase from the post-survey to the pre-survey in the second question (Appendix C), “Do you like to go to the dentist?” The most statistical piece of data was an increase of 19% in the third question (Appendix D), “How do you feel at the dentist?” Both increases are most clearly explained by the influence of the presentation that was given prior to the post-survey. It demonstrates that the students’ overall feeling regarding dentistry was more positive when an informative presentation was given. As stated before, children are naturally scared of the unknown and dentistry is full of the unknown for young patients. Children like to know what is happening and see what will be done beforehand. Dr. Vargas explained how children’s fears are eased when we use the “Tell show do” model. The presentation that was given by Skotowski modeled the tell, show, do for students that Vargas

explained and it made an impact on the students' responses to dentistry. By explaining and physically showing students what a dentist does and the tools they use, this appears to have eased the fears of some students. While it may be improbable to completely remove the fears and anxieties that children have towards dentistry, it's evident that by increasing their knowledge of dentistry through an informative and engaging presentation their overall fears can be decreased.

Limitations

A clear limitation in this research is the small sample size that my data was taken from. My results only show the data from 21 students. The best way to enhance my data would be to survey more students from various classrooms and schools. Since all of the students were in the same classroom, there could have been a possible influence from peers or their teacher as students filled out the surveys. Many of the students could have been friends and were communicating with each other. I was not present while the students filled out the pre-surveys and many students wrote "fluoride" for what they like least about the dentist. In first grade, students would not know how to correctly spell that term, let alone know what that is without help from an adult. This clearly shows that there was help and influence from the classroom teacher or other adults present.

Another limitation of my research is that many of the students' answers were undecipherable due to their age. In first grade, students are still learning how to read and write, so many of their responses were unable to be deciphered. As a result, this greatly affected the results in the last question asked on the post-survey, as shown in Appendix G. A possible solution would have been to verbally give the survey to students one at a time and record their answers myself to be able to decipher them better.

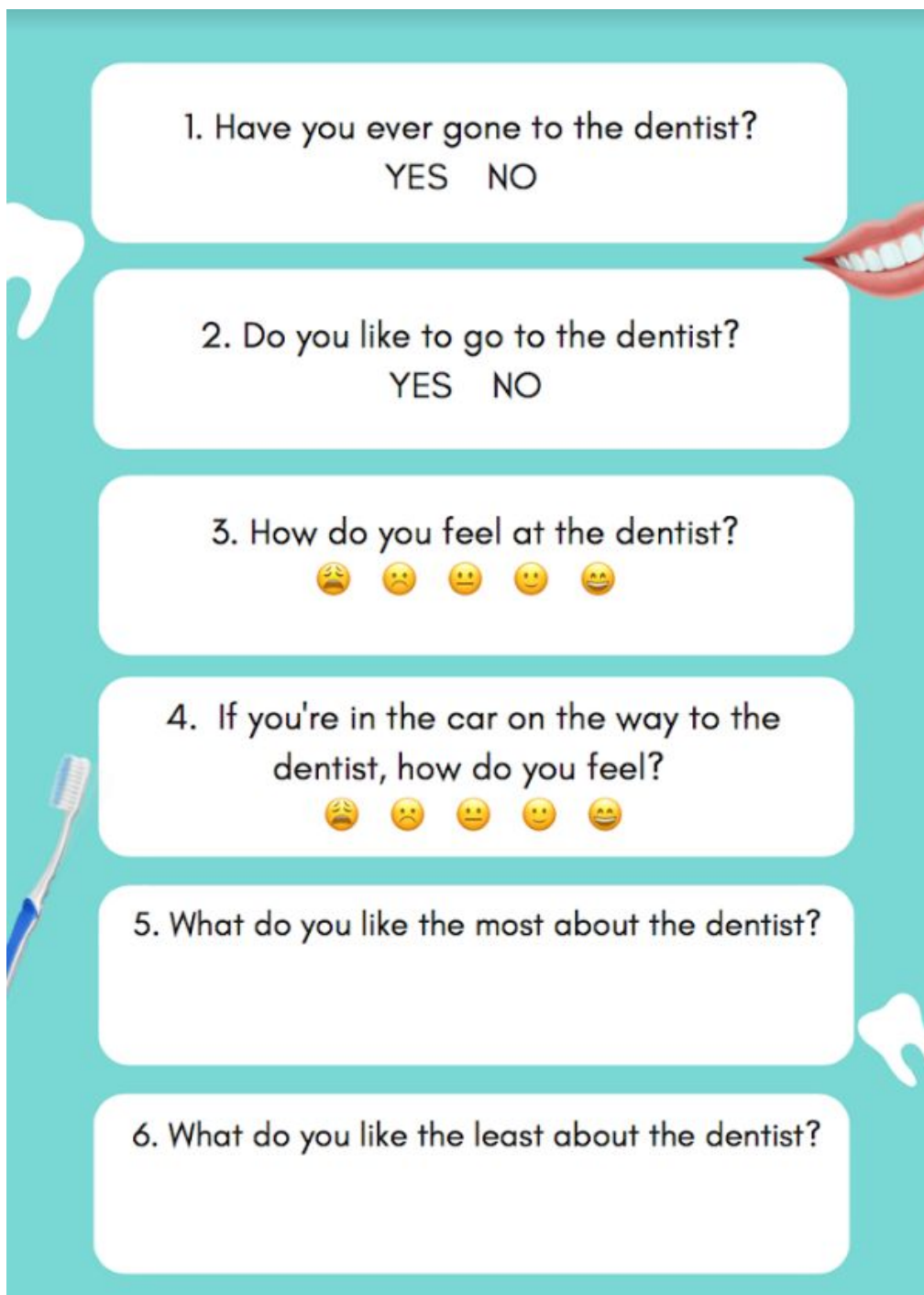
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Appendix A



1. Have you ever gone to the dentist?
YES NO

2. Do you like to go to the dentist?
YES NO

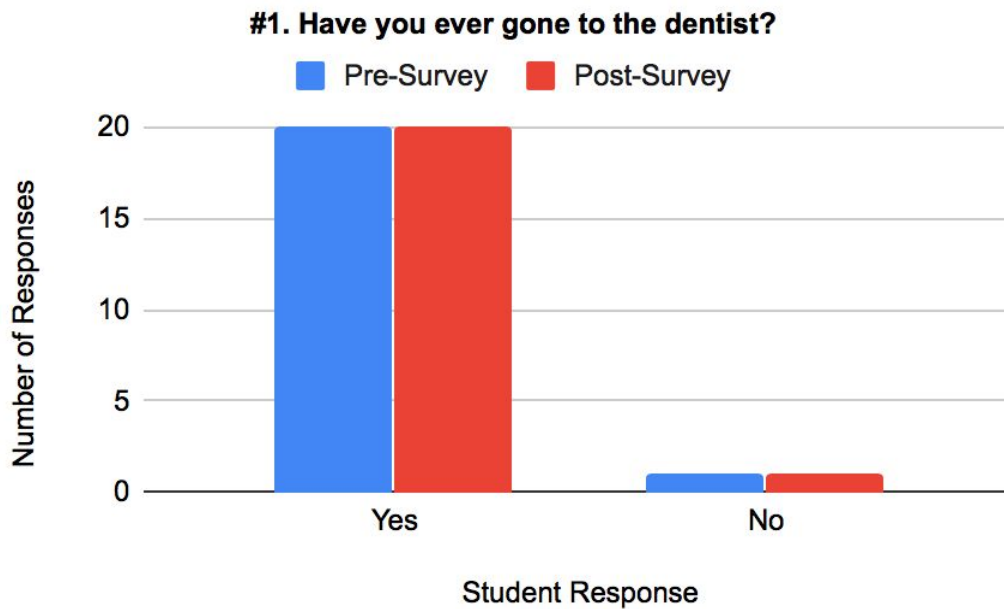
3. How do you feel at the dentist?
😞 😓 😐 😊 😄

4. If you're in the car on the way to the dentist, how do you feel?
😞 😓 😐 😊 😄

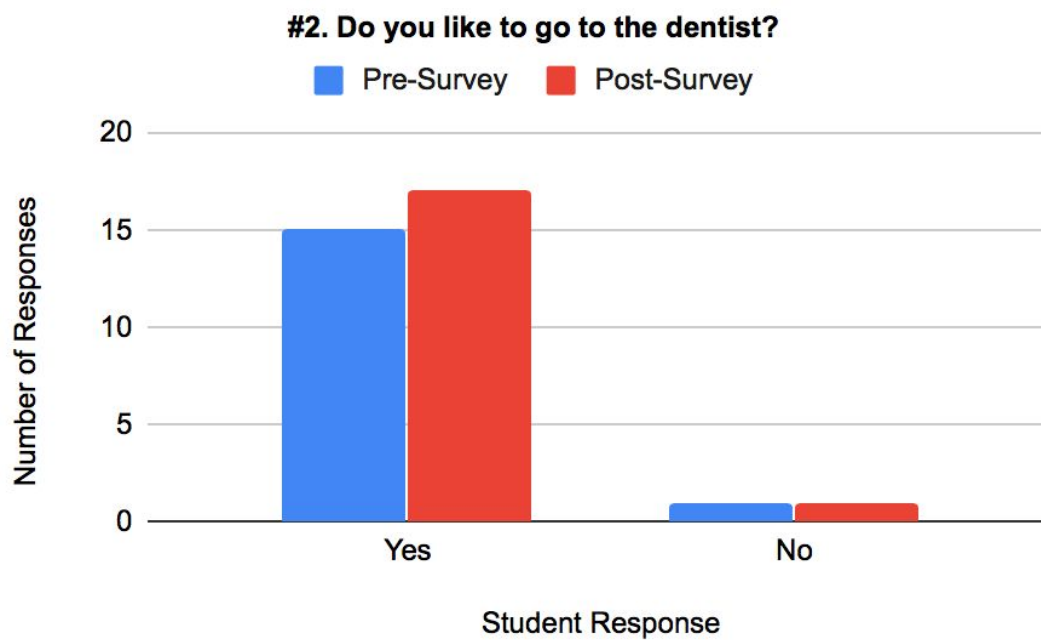
5. What do you like the most about the dentist?

6. What do you like the least about the dentist?

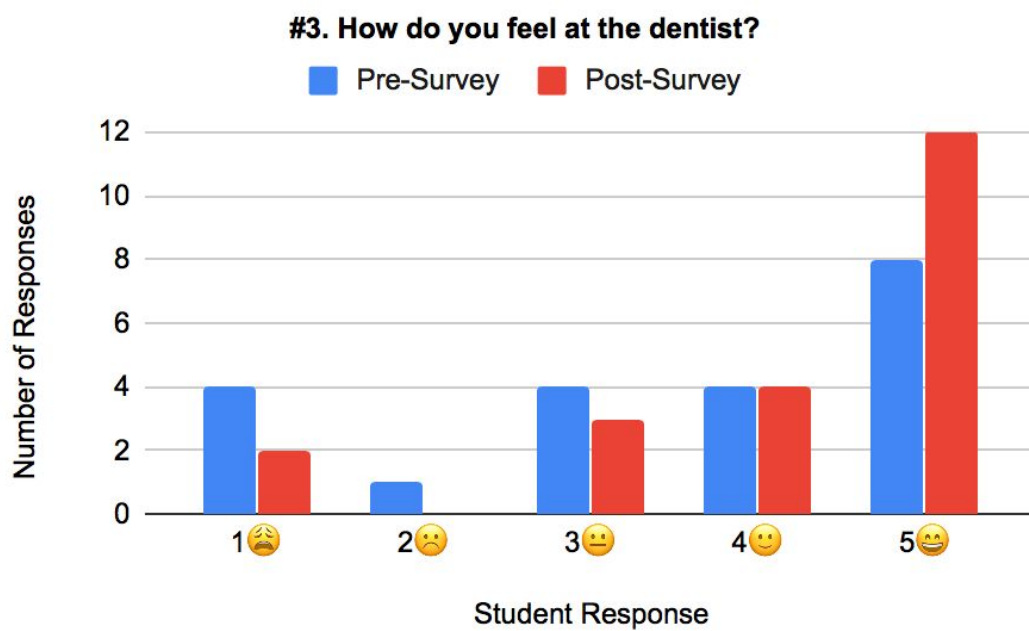
Appendix B



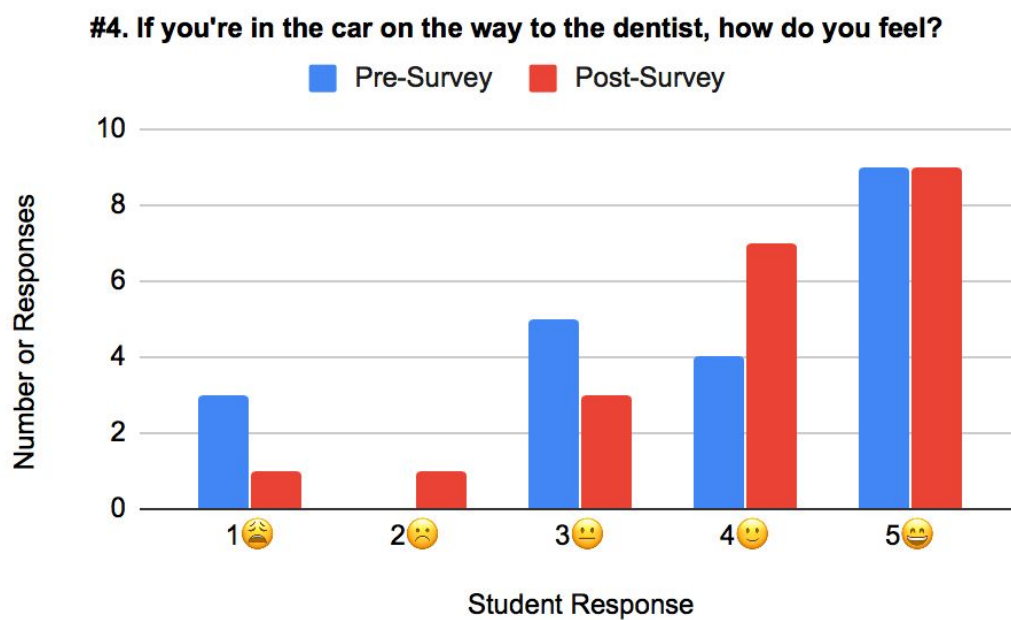
Appendix C



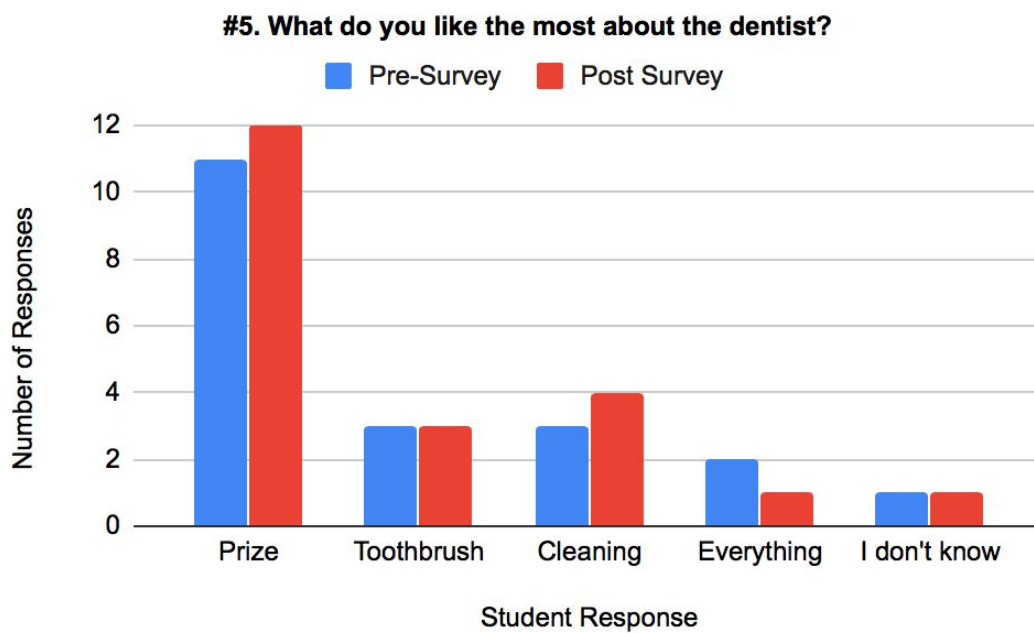
Appendix D



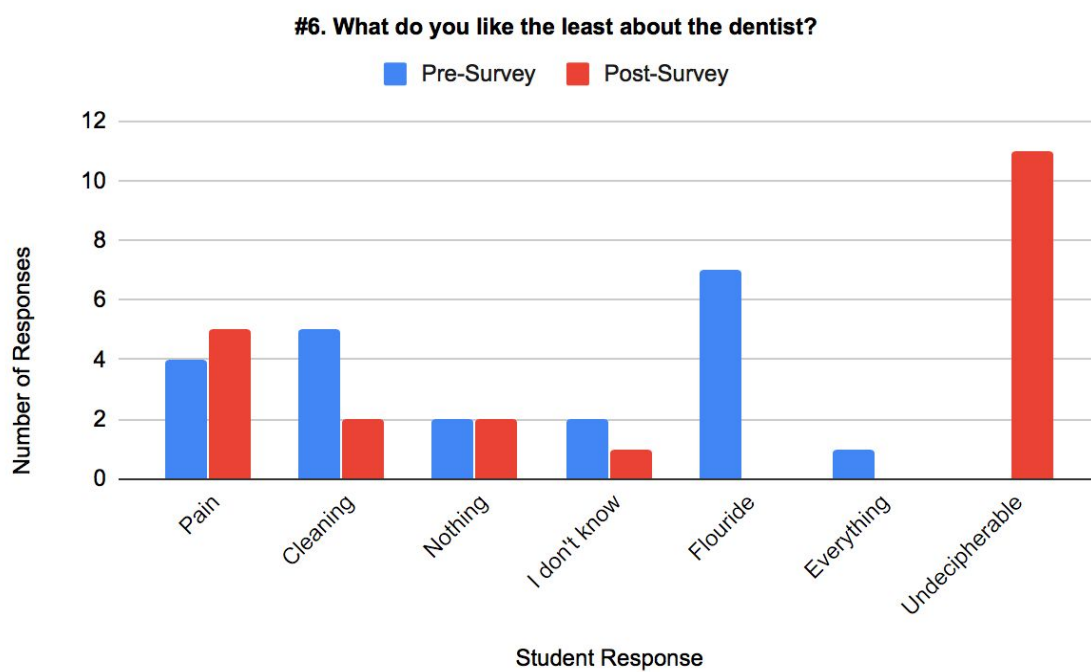
Appendix E



Appendix F



Appendix G



Appendix H



Parent Guidelines

You may choose whether or not you wish to accompany your child into the treatment room for his/her preventative care appointment. Although we sense that some children do better without parents present, we are open to having you with your child for their routine dental visit. Please review the recommended guidelines listed below to ensure your child(ren) receive the most out of their dental visit.

Please be a silent observer

- A. This allows us to maintain communication with your child
- B. Children will normally listen to their parents instead of us and may not hear our guidance
- C. You might give incorrect or misleading information

If asked to leave, be ready to immediately walk away

- A. Many children will try to control the situation
- B. "Acting out" is normal, but not necessarily tolerable in a medical environment and our staff will continue to support your child at all times in your absence

We often ask for your child(ren)'s filling appointment that the parent/legal guardian remain in the waiting room, this allows Dr. Vargas and her staff to explain procedures in their own child-friendly terms, resulting in a more positive experience overall.

Please be supportive of the practice's terminology. We try to avoid words that scare the child due to previous experiences. Please support us by NOT USING negative words that are often used for dental care. These include:

<u>DON'T USE</u>	<u>OUR EQUIVALENT</u>
needle or shot	sleepy juice
drill	Mr. Whistle, Mr. Bumpy
drill on tooth	clean a tooth
pull or yank tooth	wiggle out the broken pieces
decay, cavity	sugar bug
examination	count teeth
tooth cleaning	tickle teeth
explorer	tooth counter
rubber dam	raincoat
gas	silly air

The above vocabulary will help you understand your child's description of the filling experience. Our intention is not to "fool" the child, it is to create an experience that is positive and we appreciate your support. We are sympathetic to the fact that your child(ren) may have dental anxiety/fear of the unknown and we are confident that our highly trained staff will help ease your child(ren)'s individual concerns.

These are very important ways that you can actively help in the success of your child's dental visit. We are confident the suggested guidelines will help to prepare you and your child(ren) with confidence for their upcoming appointment and feel strongly in our abilities to ensure a positive experience.

Signature (Parent or Legal Guardian) _____ Date: _____
 1738 Lininger Lane, North Liberty, IA 52317 319.665.2573

Appendix I

1. Do you find that your new patients come in with a predisposed fear/anxiety?
(Whether it be from family members or a previous dentist)
2. What strategies or methods do you use to ease the fears or anxieties of your patients?
3. Can you sense whether a patient is new or not based on their fear/anxiety?
4. What is it that children are most afraid of when it comes to dentistry?
5. What part of their appointment do children tend to enjoy most at your clinic?
6. As a dental professional, what other things should I know for my project and future endeavors into dentistry?